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[JP,2003-212425,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE  
INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

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## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

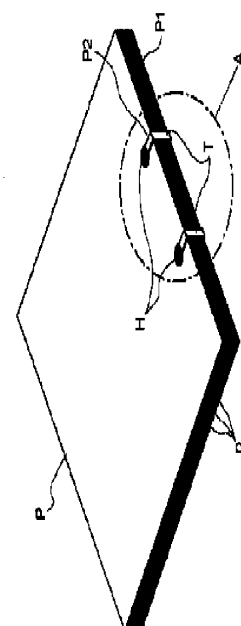
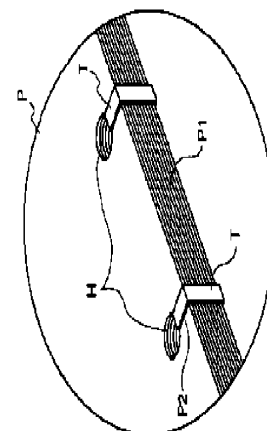
[Field of the Invention]After it received the paper discharged from the image forming device one by one and this invention laminates it, While preventing damage to a paper by filing a paper sheet bundle with the binding unit which does not use a staple needle in particular about improvement of the burst trimmer stacker which does the work which files an edge part and binds a book to booklet shape, it is related with the aftertreatment apparatus which can carry out facilitating of the work which it takes into pieces at a time to one sheet.

[0002]

[Description of the Prior Art]Various things are proposed as an aftertreatment apparatus for binding a book for the paper which received image formation processing with the electro photography-type image forming device or the printer to booklet shape automatically. That is, the work which bundles two or more sheets of papers which received image formation, and binds a book with an image forming device is done by the burst trimmer stacker which included in the image forming device or was connected. In the conventional burst trimmer stacker, after arranging the end of the laminated

Drawing selection

Representative draw



[Translation done.]

paper, the bookbinding method of filing with a staple needle is taken. However, if it is in the paper sheet bundle which received binding by a staple needle, when it is necessary to take into pieces after that, the work which rerestores the bent needle straightly and is drawn out from a paper sheet bundle is needed, but there is a risk of this demolition being injured by stabbing a finger with a needle during being not only complicated but work. When the crack which protruded focusing on the pinholing remains also in the paper taken into pieces, for example, it copies with an automatic sheet feeder by making this into a manuscript, Papers are caught by this crack, and also when becoming a cause of paper feed inferiority and a double feed or refiling again, there is a problem of the crack of this paper interfering and paper aligning stopping succeeding.

[0003]

[Problem(s) to be Solved by the Invention]On the other hand, although the composition of the simple bookbinding means which automates the work of filing through the member of tape shape between two open holes penetrated at the predetermined intervals along the one end rim of a paper sheet bundle is indicated by JP,10-59612,A, Only the art which binds between two open holes by the member of tape shape, and is connected is indicated here. therefore, since even suggestion is not made about the art of binding a paper sheet bundle for every open hole, when there are one open hole or three open holes or more depending on the bookbinding means indicated in this gazette, a paper sheet bundle cannot be filed and a book cannot be bound in the portion of each open hole. Therefore, various bookbinding gestalten according to the user's various needs were not able to be satisfied. The bookbinding means which this invention was made in view of the above-mentioned situation, is filed without damaging the paper accumulated two or more sheets, and binds a book simply, and can be taken into pieces in the paper per sheet that there is no crack attachment \*\*\*\*\* easily when still more nearly required, Let it be a technical problem to provide a burst trimmer stacker with this bookbinding means. In order that this invention may be filed to a paper edge part for every open hole of each which was formed in the paper sheet bundle and may perform binding on a tape, it becomes possible to perform binding and to meet the various needs of the user about the method of filing regardless of the number of the open hole formed in one bundle of paper sheet bundle.

[0004]

[Means for Solving the Problem]In order to solve an aforementioned problem, an invention of claim 1, In a burst trimmer stacker which introduces a paper discharged from an image forming device, and performs necessary post-processing, It had a paper binding unit which files to an open hole of a paper sheet bundle which laminated a paper with one or more holes one by one in the same position along the edge, and was laminated in it, twists around cyclic in a paper edge part which inserted in a tape and met a periphery of this open hole, and files a paper sheet bundle to booklet shape. According to this invention, as a method of filing a paper sheet bundle in connection or a burst trimmer stacker attached to an image forming device, an open hole is formed near the end of a paper sheet bundle, it turns to a paper edge part through a member of tape shape, a ring is formed in this open hole, and a paper is filed. For this reason, a swelling of a binding part is lost as compared with a case where it is based on a staple, a damage degree of a paper decreases, and also when

taking into pieces, work serves as quickness and safety. An invention of claim 2 equips claim 1 with the following.

A reel by which said paper binding unit sends out said binding tape towards an open hole over one side of said laminating paper.

Reel driving which files where it filed on this open hole and a tip part of a tape is made to project, and suspends sending of a tape.

A cutter which files to required length according to number of sheets of said paper sheet bundle, and cuts a tape, A paper through head which moves towards a paper edge part from the one side side of a laminating paper in order to press this required length's binding tape and to make it deform by flexion along said paper edge part of this open hole, A presser-foot means to make both ends of a binding tape deformed by flexion along this paper edge part crooked in order [ of this paper edge part ] to make it stick to a side on the other hand.

According to this invention, since work which files using a paper binding unit by which unitization was carried out, inserts a tape in an open hole, and is fixed can be done automatically, workability can be improved.

[0005]An invention of claim 3 is provided with a punch unit which is circular or forms a rectangular punch hole to a paper introduced into the upstream of said paper binding unit from said image forming device in claim 1 or 2. According to this invention, since a punch hole used when filing to a file is used for an open hole for filing a paper sheet bundle, the existing punching unit can be used for it. An invention of claim 4 makes \*\*\*\*\* with the feature HAKURI paper in which said binding tape is stuck on one side of a binding tape body to which an adhesive material was applied by one side, and this binding tape body in claims 1 and 2 or 3. Since a binding tape inserted in an open hole formed in the edge of a paper sheet bundle is provided with an adhesive layer, it only twists around cyclic in a paper edge part, an edge part can be filed, and the necessity of taking an exceptional fixed measure is lost. In an invention of claim 5, in claims 1, 2, and 3 or 4, said binding tape body comprises paper. By constituting a binding tape body from paper, work at the time of taking a paper sheet bundle into pieces becomes easy. An invention of claim 6 is characterized by the ability carrying out attachment-and-detachment exchange of said paper binding unit with a staple unit, and equip with it in claims 1, 2, 3, and 4 or 5. receiving a portion which can equip with a staple unit according to this invention -- a paper binding unit -- attachment and detachment -- it becomes possible to apply, without adding reconstruction to the existing burst trimmer stacker, since it is exchangeable. It becomes possible to depend a method of filing on a staple needle if needed for a user, to be based on a binding tape, or to choose.

[0006]

[Embodiment of the Invention]Hereafter, the embodiment shown in the drawing explains this invention in detail. It seems that the binding structure of the laminating paper (paper sheet bundle) by the burst trimmer stacker of this invention was shown in drawing 1 and drawing 2, respectively. That is, drawing 1 is an outline view of the paper sheet bundle for which a book was bound by booklet shape with the aftertreatment apparatus provided with the binding unit concerning one embodiment of this invention first. The paper sheet bundle (laminating paper) P which laminated

the paper p of two or more sheets by the aligned state equips the space proper place along the one end rim P1 with the composition which carried out penetration formation of the two circular open holes H by predetermined arrangement. In this invention, in order to file this paper sheet bundle P, the narrow width band-like of one sheet filed to each open hole H of every, respectively, and it has filed using the tape T. That is, the one end rim of the paper sheet bundle is filed by filing to the paper edge part P2 which met the periphery of each open hole established in the paper sheet bundle P, twisting the tape T around cyclic, and combining all the papers. After the paper sheet bundle with the open hole H punches the paper per sheet (punching), it may be formed by laminating a paper, and after bundling an unpunched paper, it may be punched collectively. Since the tape T can be individually filed to each open hole even if the formation position of an open hole and the formation number change variously according to a user's needs, it can respond to various bookbinding structures. Binding will be completed by the adhesive strength by an adhesive material only by filing to the paper edge part P2 of the paper sheet bundle P, and twisting the tape T by using what applied the adhesive material to one side of a sheet with a thin narrow width which comprises paper with pliability, resin, etc. as the binding tape T. Binding power can be heightened by making a part of both ends of the binding tape T twisted around the paper edge part P2 overlap, and pasting up. Although there are the various numbers of holes, such as two holes, three holes, and four holes, in the open hole H as mentioned above, if are based on the paper binding unit by this invention, and two or more holes will be provided and these will be filed, role sufficient as simple bookbinding can be played. According to this invention, such binding work can be done to file one place of a paper sheet bundle. The shape of the open hole (punch hole) H may be the usual circular punch hole shown in drawing 1, and may be the angle hole H of the rectangle shown in other embodiments of drawing 2. The hole with a linear shape parallel inner circumference portion along the edge part P2 of a paper sheet bundle promises binding stable when the edge part P2 was filed on the binding tape T like this angle hole H. Since the inside of the open hole H files the paper sheet bundle P filed by these methods of filing and it is hardly closed by the tape, it can be filed to a binder etc. as it is using the blank in the open hole H. the \*\* as for which the thickness of the filed portion does not become thick like stapler binding since the thin binding tape T is used -- \*\*\*\* -- since it will be in a thin state, although a lot of paper sheet bundles are filed, it gathers beautifully. Since the binding tape T currently used for binding can be easily torn with a finger etc. to take the paper sheet bundle P into pieces, troublesome and dangerous work which rebends a needle and draws it out like stapler binding is unnecessary. And in order that neither a pinholing, nor the heights of the circumference, etc. may remain in the paper taken into pieces like stapler binding, it arranges, also when refiling again and a sex is good.

[0007]Next, drawing 3 is an internal structure figure of the burst trimmer stacker provided with the binding mechanism (paper binding unit) by this invention. The internal structure of the burst trimmer stacker 200 provided with the binding mechanism of the paper by this invention is shown in drawing 3. A punch hole is punched by the punch unit 21 at the paper p outputted from the image forming device 150, and after aligning paper by loading a paper into the paper-aligning tray 42, the

paper binding unit 41 performs binding. In this example, the installation part of the paper binding unit 41 is made into the conventional stapler unit in common, exchanges units by a user's liking and makes proper use possible. Therefore, a common mechanism will be used about the mechanism in which both units are made to move along the one end rim of a paper sheet bundle on the paper-aligning tray 42. About with any it shall have equipped between the paper binding unit 41 and a stapler unit now, it is possible to make it recognize to the device side by setting the change-over switch etc. which were formed in the image forming device or the burst trimmer stacker etc.

[0008]Next, the composition of the burst trimmer stacker of drawing 3 and operation are explained in detail. The burst trimmer stacker 200 is connected to the delivery port provided in the side of the image forming device 150. This burst trimmer stacker 200 is constituted so that the paper [finishing / image formation] p discharged from the delivery port 151 of the image forming device 150 may be received from the inlet roller pair 1. The inlet sensor S1 which detects carrying in of the paper p is arranged at the transportation direction upstream of the inlet roller pair 1. The punch unit 21 which punches the hole for filing in the paper p at the paper discharge carrying path from the inlet roller pair 1, the shift switching claw A changed so that the paper p may be conveyed at one discharge carrying path of the carrying paths I and II. The 1st conveying roller pair 2 that leads the paper p to the shift switching claw A from the switching claw B and the punch unit 21 for changing the transportation direction of the paper p from the carrying path II to the carrying path III is formed. The paper p which goes in the tray 31 direction supported through the carrying path I which passes along the 1st top conveying roller pair 3 and the 2nd top conveying roller pair 4, and results in the upper conveying roller pair 5 with the shift switching claw A and the switching claw B so that up-and-down motion was possible. It is divided into the paper p which goes in the lower tray 32 direction supported like the upper tray 31 so that up-and-down motion was possible, and the paper p which faces to the paper binding unit 41 and the paper-aligning tray 42 through the carrying path III through the carrying path II which results in the lower paper ejecting roller pair 7 through the shift conveying roller pair 6. The 1st conveying roller pair 8 for conveying the paper p from the switching claw B to the paper binding unit 41, the 2nd conveying roller pair 9, the 3rd conveying roller pair 10, and paper ejecting roller pair 11 grade are arranged at the carrying path III to paper binding unit 41 direction. The middle stack switching claw C is formed in the carrying path III, and it is divided into the carrying path III which sends the paper p in the direction of a direct paper binding unit, and the carrying path IV for carrying out the press tuck of the paper p. The middle stack conveying roller pair 12 is arranged at the carrying path IV. It is arranged by the paper-aligning tray 42 holding a paper, and around the paper binding unit 41 the paper-aligning tray 42, The jogger fence 42b for performing consistency of the tray body 42a and a paper, It has the return roller pair 42e for striking and adjusting the paper on the emission belt 42c for discharging the bunch of the paper which was located behind the jogger fence 42b and filed, the paper receptacle 42d which is located in the lower end part of the tray body 42a, and receives the lower end edge of a paper sheet bundle, and a tray body. The punch unit 21 is provided with the composition which punches the paper p immediately after having discharged from the image forming device by making the punch 21a move reciprocally to a dice like a hand punch. In this punch unit 21, in performing a

stapling process, while not using it, even if it is a case where binding processing by the paper binding unit 41 is not performed, it is usable to punch. To perform binding processing by the paper binding unit 41, it is necessary to carry out punching formation of the hole of the necessary number in the required position which met the edge of the paper sheet bundle as the pretreatment.

[0009]Next, based on drawing 4, the control circuit of the burst trimmer stacker of this invention is explained. Each sensor in the burst trimmer stacker 200 and the signal from each switch are inputted into CPU70 via I/O interface 60. According to the inputted signal, CPU70, The entrance drive motor 28 and the up-and-down trays 31 and 32. The delivery motor 75, the paper binding unit 41 (or) which drive the up-and-down motor 71 which you make it go up and down, the shift motor 72 moved to right and left, the solenoid 73 which performs switching operation of each switching claws A and B and the middle switching claw C, and the return roller 42c and which strike and drive the roller of the solenoid 74 and a delivery system The jogger motor 79 for moving the paper binding unit motor 76 which drives a staple unit, the discharge motor 77 which drives the emission belt 42c, the movable motor 78 to which the paper binding unit 41 (or staple unit) is moved, and the jogger fence 42b is driven. When replacing with the paper binding unit 41 and equipping with a staple unit, the motors 76 and 78 may be used for staple units, respectively. CPU70 controls the drive of a punch motor by the signal from the inlet sensor S1 further. If it changes so that the paper p may convey the switching claw B in the carrying path III direction and the first paper advances into the carrying path III when performing paper binding processing, If it is sent into the transportation part IV for a press tuck by the middle stack switching claw C, and is conveyed by the middle stack conveying roller pair 12 and a paper reaches a suitable position, the paper p will stop. On the other hand, the paper p of the 2nd sheet follows the carrying path III as it is, and dies. And the middle stack conveying roller pair 12 is driven in the position to which the paper and tip of the beginning by which the stack was carried out by the transportation part IV are equal, and two sheets are conveyed simultaneously after that. If the paper binding inlet sensor which a paper sheet rear end does not illustrate is passed, the jogger fence 42b will jog inside only prescribed distance from a position in readiness. A paper binding inlet sensor detects it at the paper sheet rear end passage time, inputs the signal into CPU70, and in CPU70. striking after specified time elapse, making the solenoid 74 one, striking the return roller 42c, and it performing pendulum motion by one of the solenoid 74, and OFF, striking the paper p at the time of one, returning it downward, arranging, and dashing against the tray 42a -- \*\*\*\*\* of the paper p -- it carries out. The paper after the 3rd sheet passes the carrying path III, and performs above-mentioned jogging operation per each paper. After striking, turning off the solenoid 74 and predetermined time's passing, by the jogger motor 79, the jogger fence 42b moves inside paper width, stops, and carries out the end of \*\*\*\*\*. The jogger fence 42b returns to the position of after that origin, and waits for the following paper. This operation is performed to the last page. After jogging to the last page, the both ends of a paper sheet bundle are pressed down, paper binding processing is performed, and paper is delivered to the lower tray 32 with the emission belt 42a.

[0010]Drawing 5 is a flow chart which shows the control procedure at the time of making the arbitrary modes selectable from the inside in the mode of only punching by a punch unit, and the

paper binding mode on the binding tape accompanied by punch operation. the binding mode using a binding unit -- or when a staple mode equips a burst trimmer stacker with which unit, it is made to recognize to the device side First, after it is checked that and the paper has advanced when the inlet sensor S1 turns on in Step 1 namely, [ the inlet sensor ] A punch unit is operated and it discharges on the paper-aligning tray 42 by the procedure which was punched (Step 2) and was continuously mentioned above in this paper (Step 3). The paper of the number of sheets for one bundle in the job concerned (n sheet) discharges on the paper-aligning tray 42, When it aligns, it is judged (Step 4), whether it files, or it discharges as it is (Step 5), When paper binding on the binding tape T is chosen, after filing, and performing binding processing, each binding motors 76 and 78 are turned off (Step 6), a shift transportation motor is driven, and it discharges outside the plane (Step 7). [ the motors 76 and 78 for units ]

[0011]Next, drawing 6 (a) thru/or (f) is a continuity chart showing the binding operation by the paper binding unit 41 with which the burst trimmer stacker by this invention is provided. The paper sheet bundle P with the open hole H is expressed in the section. The reel 100 which holds this paper binding unit 41 where the binding tape T (paper streamer) is rolled about, and rotates the axis 101 as a center, It has the feed rollers 102 and 103 which guide paper streamer T sent out from the reel 100, the cutter 104, the paper through head 105, and the presser-foot roller (presser-foot means) 106. Operation which sends out paper streamer T from the reel 100 is performed by filing the reel 100 or the feed rollers 102 and 103, for example, and driving by motor 76 grade. Paper streamer T consists of the main part T1 of a paper streamer (binding tape body) by which the adhesive material is applied to one side in this example, and the HAKURI paper T2 adhering to the adhesive face of the main part T1 of a paper streamer, and paper streamer T is wound around the reel 100, and is supplied as RIFIRU. The paper sheet bundle P is set so that the paper sheet bundle upper surface may be located in the direct lower position of the advancing route of paper streamer T (T1) in parallel like a graphic display. The paper sheet bundle P is set so that the paper through head 105 may be located right above the edge part P2 of the paper sheet bundle P. In the position of a graphic display, the paper through head 105 is constituted so that up-and-down motion is possible. The paper through head 105 operates by the binding motor 76. The presser-foot roller 106 (106a, 106b) is supported via the spring 111 on the movable base 110 supported enabling the free attitude to a transverse direction, enabling free rotation, and the presser-foot roller 106 can move right and left in the state where it was welded by pressure to the undersurface of the paper sheet bundle P. The drive of the movable base 110 uses the driving force of the binding motor 76, for example.

[0012]First, in drawing 6 (a), paper streamer (binding tape) T is sent out from the reel 100 by part for required length, and the feed rollers 102 and 103. The quantity to send out is adjusted according to the number of sheets (thickness) of the paper sheet bundle as a subject. When paper streamer T is sent by the feed rollers 102 and 103, while the main part T1 of a paper streamer goes straight on towards the upper surface of the paper sheet bundle P, it dissociates from the main part T1 of a paper streamer in the position of the roller 103, and it is reversed in another direction and the HAKURI paper T2 is sent out. As for the feed per revolution of paper streamer T, length is decided according to the paper number of sheets of a paper sheet bundle. In drawing 6 (b), as the main part

T1 of a paper streamer of required length was sent out and it was shown in (a), after the tip of the main part T1 of a paper streamer stops in the state where it overhanged on the open hole, the cutter 104 operates and it cuts. When the paper through head 105 descends from a right above position towards the open hole H of the paper sheet bundle P (edge part P2) simultaneously and the both ends 105a and 105b are dropped over inside-and-outside both the wall surfaces of the edge part P2, the both ends of the main part T1 of a paper streamer are deformed by flexion, and it is made to project to the undersurface side of the paper sheet bundle P, as shown in (c). At this time, one end of the main part T1 of a paper streamer is inserted in the open hole H, and it is in the state where the other end was installed in the lateral surface of the edge part P2. In drawing 6 (d), when the movable base 110 carries out specified quantity movement to the right direction, one presser-foot roller 106a moves along the undersurface of the paper sheet bundle P, the end of the main part T1 of a paper streamer projected on the undersurface of the paper sheet bundle is made crooked upward, it pushes against the undersurface of the edge part P2, and the adhesive face side is stuck. The tips of the main part of a paper streamer make the length of cut paper streamer T the length which laps lightly at the time of binding completion. In drawing 6 (e), the movable base 110 carries out prescribed distance movement to a left, the other end of the main part T1 of a paper streamer is made crooked upward, and an adhesive face is forced and stuck on the undersurface of the edge part P2. For this reason, the both ends of the main part T1 of a paper streamer are pasted up in the state where it lapped in part on the undersurface of the edge part P2. So far, although the state where the paper through head 105 descended on the edge part P2 is maintained, in drawing 6 (f), the paper through head 105 goes up and a series of binding operations are ended.

[0013]Next, drawing 7 files with the paper-aligning tray of the burst trimmer stacker provided with the paper binding unit by this invention, and is an appearance perspective view of a unit. A binding mechanism comprises the paper-aligning tray 42 and the paper binding unit 41 which perform paper loading - \*\* paper aligning. The composition of the paper-aligning tray 42 which is a portion which exchanged for the staple unit of the burst trimmer stacker 200 equipped with the staple unit in this example, has equipped with the paper binding unit 41, and performs paper loading - paper aligning is fundamentally [ as the mechanism in which stapler binding is performed ] the same. The paper-aligning tray 42 comprises the tray body 42a, the side fence 42b, the emission belt 42c, the paper receptacle 42d, etc. like the above-mentioned.

[0014]Drawing 8 is the continuation perspective view of the paper-aligning tray of a burst trimmer stacker, and a paper binding unit of operation provided with the binding mechanism by this invention. Hereafter, order is explained for operation of the paper binding unit 41 by this invention later on using the continuity chart of drawing 8. In drawing 8 (a), the paper p is loaded one sheet at a time on the tray body 42a of the paper-aligning tray 42. The paper p into which it newly went from the tray body 42a bottom is loaded on the paper sheet bundle P which is not been [ the paper sheet bundle / it ] cautious or illustrated in drawing 8 (b) and which struck, fell by Collo etc., stopped with the lower paper receptacle 42d, and was already deposited. Subsequently, if the last page is loaded like drawing 8 (c), the side fence 42b will strike the both the right and left ends of the



paper sheet bundle P, and a longitudinal direction will be arranged. At this time, the binding unit 41 is in the position estranged from the lower end edge of a paper sheet bundle. Then, like drawing 8 (d), the paper binding unit 41 goes up and it is \*\*\*\*\* about the lower end edge of a paper sheet bundle. A \*\*\*\*\* position is the edge part P2 in which the open hole H is located as drawing 6 explained. A series of binding operations explained by drawing 6 in this state are performed, the open hole H lets paper streamer T (main part T1 of a paper streamer) pass, and binding is performed. Subsequently, when the open hole H also performs those with two place, and two binding, as shown in drawing 8 (e), according to the guide rail mechanism which the paper binding unit 41 does not illustrate, it moves to the position of the open hole H of another side, the same operation is performed once again, and paper binding operation is completed. When paper binding is completed, side each fence 42b evacuates to right and left, and the paper sheet bundle P is discharged outside the plane by the discharge claw of the paper-aligning tray 42. As mentioned above, according to this invention, an easy and convenient bookbinding gestalt can be provided and it becomes possible to provide a more highly efficient and worthy burst trimmer stacker to a user.

[0015]

[Effect of the Invention]As mentioned above, according to this invention, it files without damaging the paper accumulated two or more sheets, and a book is bound simply, and when still more nearly required, a burst trimmer stacker with the bookbinding means which can be taken into pieces in the paper per sheet that there is no crack attachment \*\*\*\*\* easily, and this bookbinding means can be provided. Since this invention is filed to a paper edge part for every open hole of each which was formed in the paper sheet bundle and performs binding on a tape, regardless of the number of the open hole formed in one bundle of paper sheet bundle, it can perform binding and can meet the various needs of the user about the method of filing. That is, as a method of filing a paper sheet bundle in connection or the burst trimmer stacker attached to an image forming device, the invention of claim 1 forms an open hole near the end of a paper sheet bundle, is turned to a paper edge part through the member of tape shape, forms a ring in this open hole, and files a paper. For this reason, the swelling of a binding part is lost as compared with the case where it is based on a staple, the damage degree of a paper decreases, and also when taking into pieces, work serves as quickness and safety. That is, when filing, even after being able to file a paper sheet bundle simple and filing, it can take into pieces easily. Since a metaled needle is not used like a stapler, when taking into pieces, with a needle, there is also no beam squirrel \*\*\*\*\* with a crack, and, also safely, a hand can be contributed.

[0016]According to the invention of claim 2, since the work which files using the paper binding unit by which unitization was carried out, inserts a tape in an open hole, and is fixed can be done automatically, workability can be improved. According to the invention of claim 3, in order to perform binding, there is no necessity of making a hole specially. Since the punch hole used when filing to a file is used for the open hole for filing a paper sheet bundle, the existing punching unit can be used for it. According to the invention of claim 4, since the binding tape inserted in the open hole formed in the edge of a paper sheet bundle is provided with the adhesive layer, it only twists

around cyclic in a paper edge part, an edge part can be filed, and the necessity of taking an exceptional fixed measure using a paste etc. is lost. According to the invention of claim 5, by constituting a binding tape body from paper, a binding tape can be torn easily by hand and the work at the time of taking a paper sheet bundle into pieces becomes easy. receiving the portion which can equip with a staple unit according to the invention of claim 6 -- a paper binding unit -- attachment and detachment -- it becomes possible to apply, without adding reconstruction to the existing burst trimmer stacker, since it is exchangeable. It becomes possible to depend the method of filing on a staple needle if needed for a user, to be based on a binding tape, or to choose. Rather than the method of filing by a staple needle, an easy and convenient bookbinding gestalt can be provided and it becomes possible to provide a more highly efficient and worthy burst trimmer stacker to a user.

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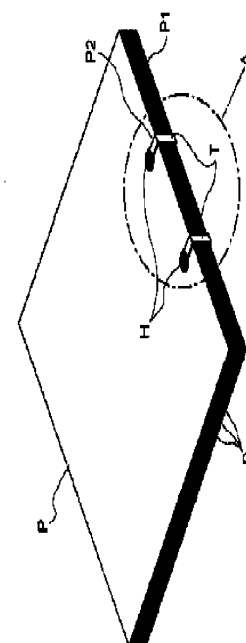
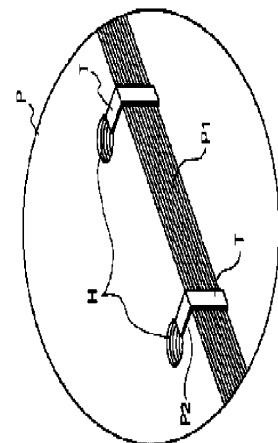
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## DRAWINGS

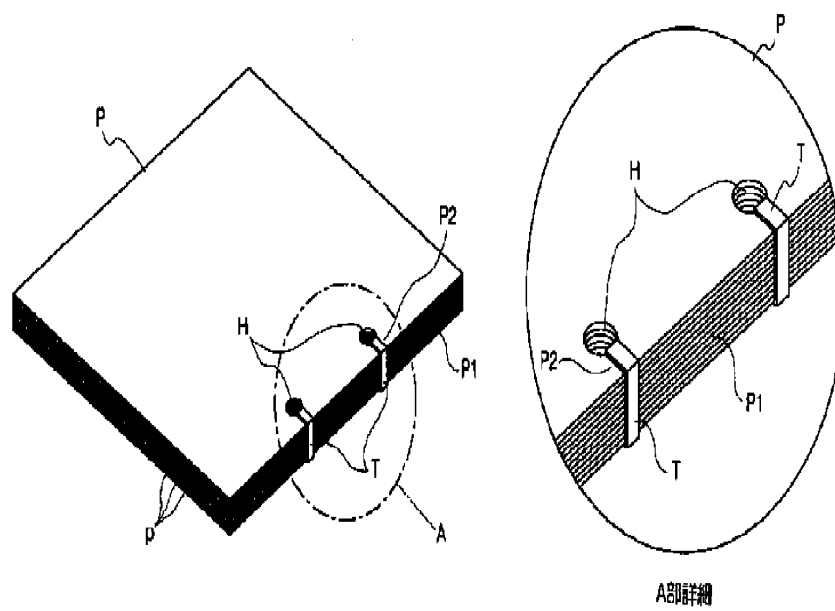
[Drawing 1]

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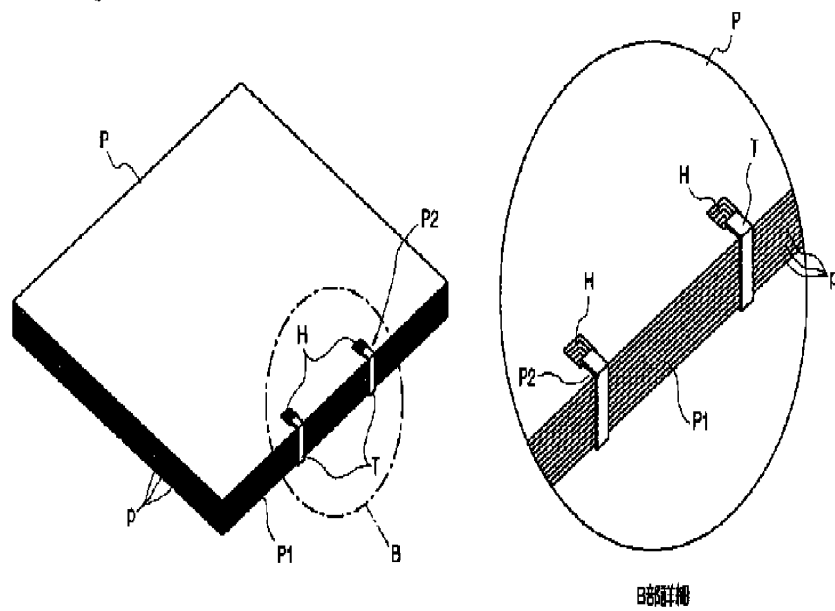
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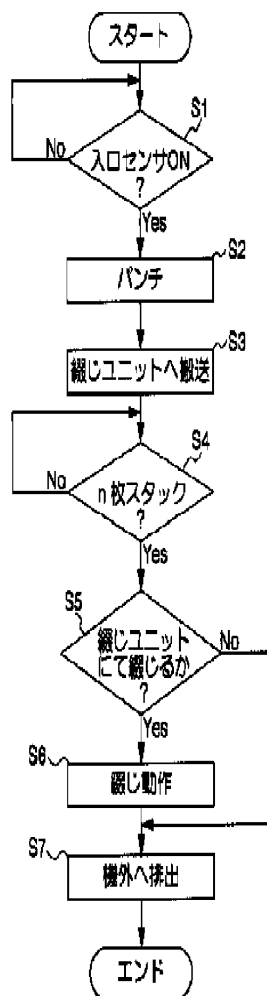
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[Drawing 2]

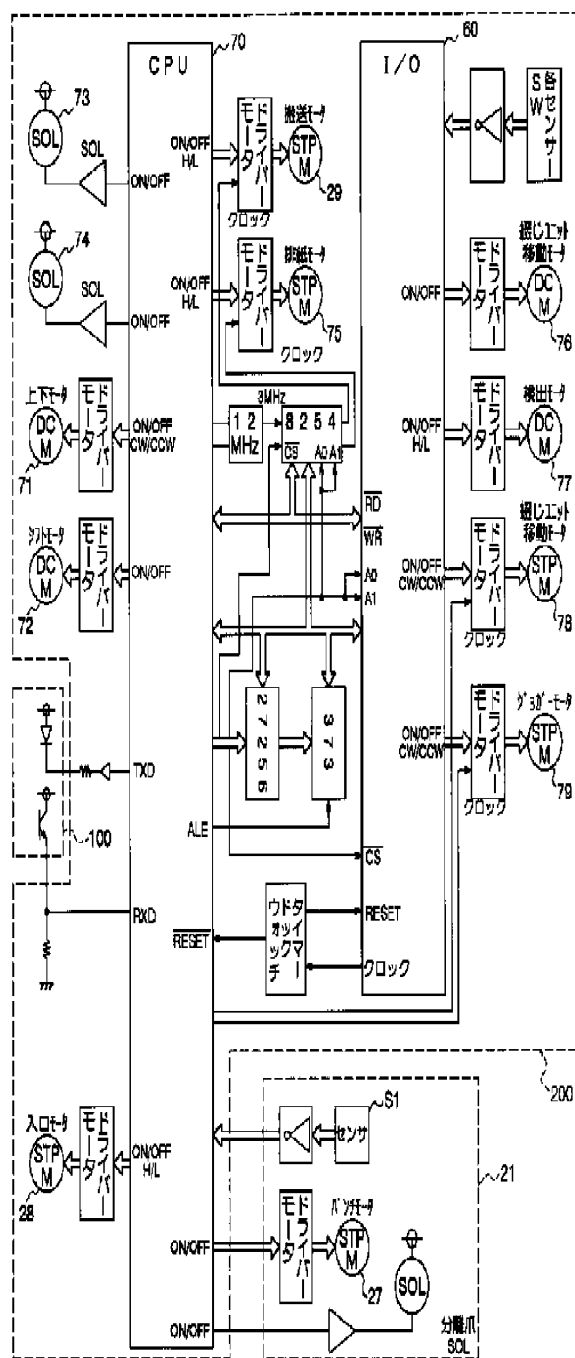


[Drawing 5]

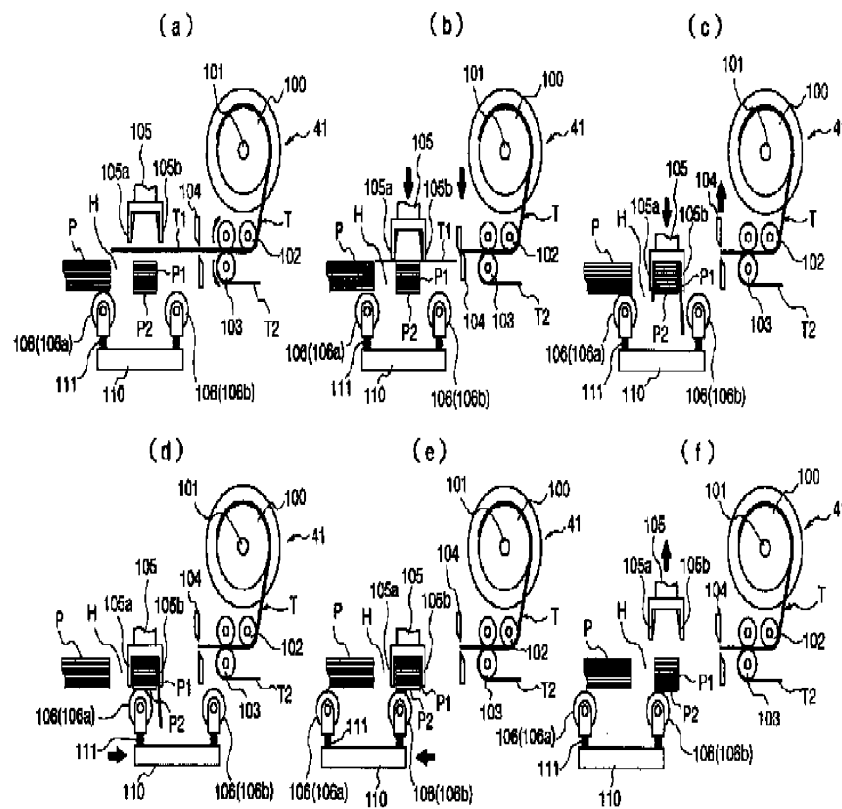


[Drawing 3]

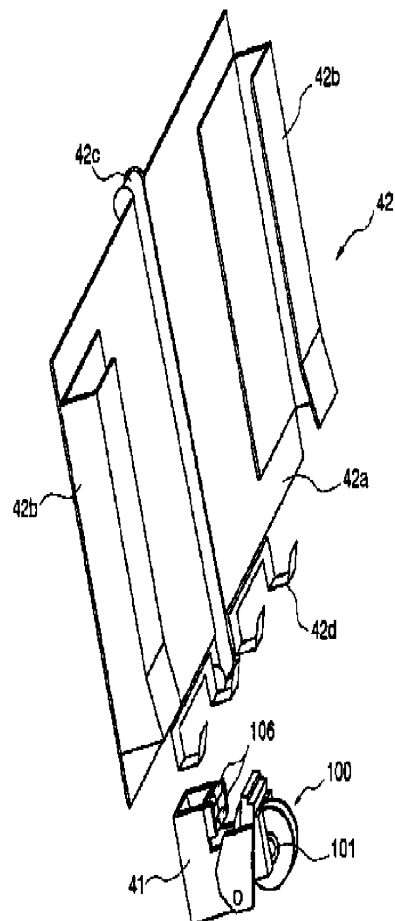
<http://www4.ipdl.inpit.go.jp/Tokujitu/tjsogodbenk.ipdl> (4 of 7)5/7/2009 7:31:36 PM



[Drawing 6]

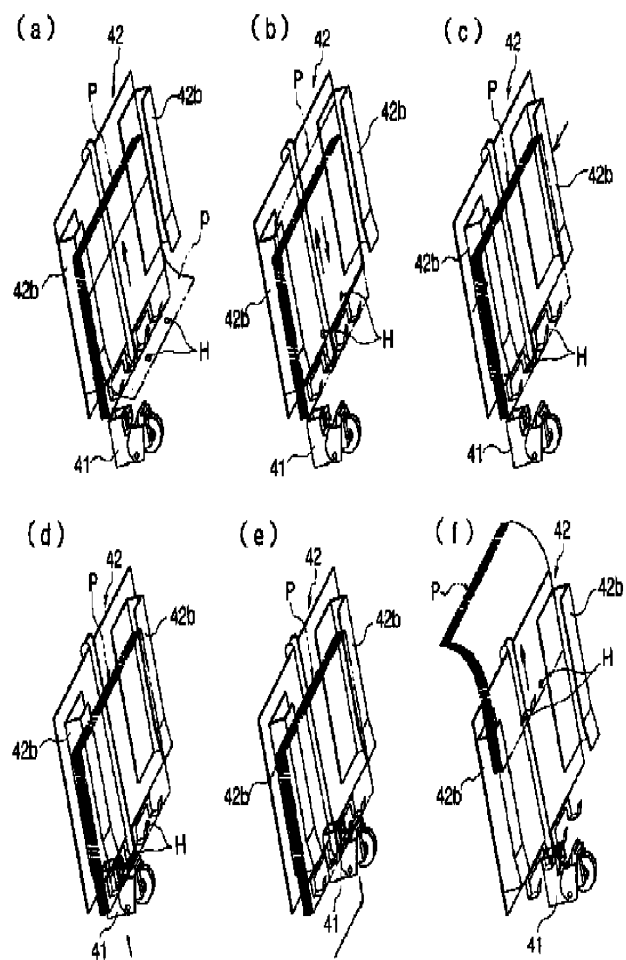


[Drawing 7]



[Drawing 8]





[Translation done.]

DOCUMENT 1/1

DOCUMENT  
NUMBER

@: unavailable

JAPANESE

[JP,2003-212425,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE  
INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## MEANS

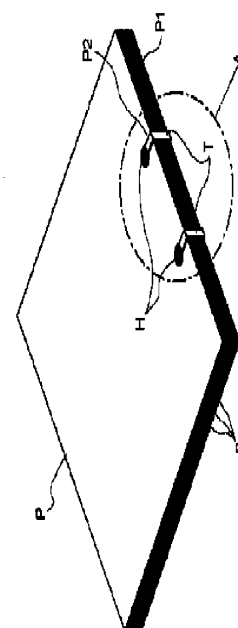
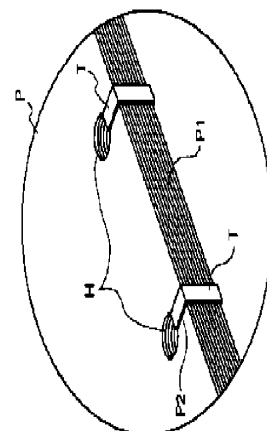
[Means for Solving the Problem] In order to solve an aforementioned problem, an invention of claim 1, In a burst trimmer stacker which introduces a paper discharged from an image forming device, and performs necessary post-processing, It had a paper binding unit which files to an open hole of a paper sheet bundle which laminated a paper with one or more holes one by one in the same position along the edge, and was laminated in it, twists around cyclic in a paper edge part which inserted in a tape and met a periphery of this open hole, and files a paper sheet bundle to booklet shape.

According to this invention, as a method of filing a paper sheet bundle in connection or a burst trimmer stacker attached to an image forming device, an open hole is formed near the end of a paper sheet bundle, it turns to a paper edge part through a member of tape shape, a ring is formed in this open hole, and a paper is filed. For this reason, a swelling of a binding part is lost as compared with a case where it is based on a staple, a damage degree of a paper decreases, and also when taking into pieces, work serves as quickness and safety. An invention of claim 2 equips claim 1 with the following.

A reel by which said paper binding unit sends out said binding tape towards an open hole over one side of said laminating paper.

Drawing selection

Representative draw



[Translation done.]

Reel driving which files where it filed on this open hole and a tip part of a tape is made to project, and suspends sending of a tape.

A cutter which files to required length according to number of sheets of said paper sheet bundle, and cuts a tape, A paper through head which moves towards a paper edge part from the one side side of a laminating paper in order to press this required length's binding tape and to make it deform by flexion along said paper edge part of this open hole, A presser-foot means to make both ends of a binding tape deformed by flexion along this paper edge part crooked in order [ of this paper edge part ] to make it stick to a side on the other hand.

According to this invention, since work which files using a paper binding unit by which unitization was carried out, inserts a tape in an open hole, and is fixed can be done automatically, workability can be improved.

[0005]An invention of claim 3 is provided with a punch unit which is circular or forms a rectangular punch hole to a paper introduced into the upstream of said paper binding unit from said image forming device in claim 1 or 2. According to this invention, since a punch hole used when filing to a file is used for an open hole for filing a paper sheet bundle, the existing punching unit can be used for it. An invention of claim 4 makes \*\*\*\*\* with the feature HAKURI paper in which said binding tape is stuck on one side of a binding tape body to which an adhesive material was applied by one side, and this binding tape body in claims 1 and 2 or 3. Since a binding tape inserted in an open hole formed in the edge of a paper sheet bundle is provided with an adhesive layer, it only twists around cyclic in a paper edge part, an edge part can be filed, and the necessity of taking an exceptional fixed measure is lost. In an invention of claim 5, in claims 1, 2, and 3 or 4, said binding tape body comprises paper. By constituting a binding tape body from paper, work at the time of taking a paper sheet bundle into pieces becomes easy. An invention of claim 6 is characterized by the ability carrying out attachment-and-detachment exchange of said paper binding unit with a staple unit, and equip with it in claims 1, 2, 3, and 4 or 5. receiving a portion which can equip with a staple unit according to this invention -- a paper binding unit -- attachment and detachment -- it becomes possible to apply, without adding reconstruction to the existing burst trimmer stacker, since it is exchangeable. It becomes possible to depend a method of filing on a staple needle if needed for a user, to be based on a binding tape, or to choose.

[0006]

[Embodiment of the Invention]Hereafter, the embodiment shown in the drawing explains this invention in detail. It seems that the binding structure of the laminating paper (paper sheet bundle) by the burst trimmer stacker of this invention was shown in drawing 1 and drawing 2, respectively.

That is, drawing 1 is an outline view of the paper sheet bundle for which a book was bound by booklet shape with the aftertreatment apparatus provided with the binding unit concerning one embodiment of this invention first. The paper sheet bundle (laminating paper) P which laminated the paper p of two or more sheets by the aligned state equips the space proper place along the one end rim P1 with the composition which carried out penetration formation of the two circular open holes H by predetermined arrangement. In this invention, in order to file this paper sheet bundle P, the narrow width band-like of one sheet filed to each open hole H of every, respectively, and it has

filed using the tape T. That is, the one end rim of the paper sheet bundle is filed by filing to the paper edge part P2 which met the periphery of each open hole established in the paper sheet bundle P, twisting the tape T around cyclic, and combining all the papers. After the paper sheet bundle with the open hole H punches the paper per sheet (punching), it may be formed by laminating a paper, and after bundling an unpunched paper, it may be punched collectively. Since the tape T can be individually filed to each open hole even if the formation position of an open hole and the formation number change variously according to a user's needs, it can respond to various bookbinding structures. Binding will be completed by the adhesive strength by an adhesive material only by filing to the paper edge part P2 of the paper sheet bundle P, and twisting the tape T by using what applied the adhesive material to one side of a sheet with a thin narrow width which comprises paper with pliability, resin, etc. as the binding tape T. Binding power can be heightened by making a part of both ends of the binding tape T twisted around the paper edge part P2 overlap, and pasting up. Although there are the various numbers of holes, such as two holes, three holes, and four holes, in the open hole H as mentioned above, if are based on the paper binding unit by this invention, and two or more holes will be provided and these will be filed, role sufficient as simple bookbinding can be played. According to this invention, such binding work can be done to file one place of a paper sheet bundle. The shape of the open hole (punch hole) H may be the usual circular punch hole shown in drawing 1, and may be the angle hole H of the rectangle shown in other embodiments of drawing 2. The hole with a linear shape parallel inner circumference portion along the edge part P2 of a paper sheet bundle promises binding stable when the edge part P2 was filed on the binding tape T like this angle hole H. Since the inside of the open hole H files the paper sheet bundle P filed by these methods of filing and it is hardly closed by the tape, it can be filed to a binder etc. as it is using the blank in the open hole H. the \*\* as for which the thickness of the filed portion does not become thick like stapler binding since the thin binding tape T is used -- \*\*\*\* -- since it will be in a thin state, although a lot of paper sheet bundles are filed, it gathers beautifully. Since the binding tape T currently used for binding can be easily torn with a finger etc. to take the paper sheet bundle P into pieces, troublesome and dangerous work which rebends a needle and draws it out like stapler binding is unnecessary. And in order that neither a pinholing, nor the heights of the circumference, etc. may remain in the paper taken into pieces like stapler binding, it arranges, also when refiling again and a sex is good.

[0007]Next, drawing 3 is an internal structure figure of the burst trimmer stacker provided with the binding mechanism (paper binding unit) by this invention. The internal structure of the burst trimmer stacker 200 provided with the binding mechanism of the paper by this invention is shown in drawing 3. A punch hole is punched by the punch unit 21 at the paper p outputted from the image forming device 150, and after aligning paper by loading a paper into the paper-aligning tray 42, the paper binding unit 41 performs binding. In this example, the installation part of the paper binding unit 41 is made into the conventional stapler unit in common, exchanges units by a user's liking and makes proper use possible. Therefore, a common mechanism will be used about the mechanism in which both units are made to move along the one end rim of a paper sheet bundle on the paper-

aligning tray 42. About with any it shall have equipped between the paper binding unit 41 and a stapler unit now, it is possible to make it recognize to the device side by setting the change-over switch etc. which were formed in the image forming device or the burst trimmer stacker etc.

[0008]Next, the composition of the burst trimmer stacker of drawing 3 and operation are explained in detail. The burst trimmer stacker 200 is connected to the delivery port provided in the side of the image forming device 150. This burst trimmer stacker 200 is constituted so that the paper [finishing / image formation] p discharged from the delivery port 151 of the image forming device 150 may be received from the inlet roller pair 1. The inlet sensor S1 which detects carrying in of the paper p is arranged at the transportation direction upstream of the inlet roller pair 1. The punch unit 21 which punches the hole for filing in the paper p at the paper discharge carrying path from the inlet roller pair 1, the shift switching claw A changed so that the paper p may be conveyed at one discharge carrying path of the carrying paths I and II. The 1st conveying roller pair 2 that leads the paper p to the shift switching claw A from the switching claw B and the punch unit 21 for changing the transportation direction of the paper p from the carrying path II to the carrying path III is formed. The paper p which goes in the tray 31 direction supported through the carrying path I which passes along the 1st top conveying roller pair 3 and the 2nd top conveying roller pair 4, and results in the upper conveying roller pair 5 with the shift switching claw A and the switching claw B so that up-and-down motion was possible. It is divided into the paper p which goes in the lower tray 32 direction supported like the upper tray 31 so that up-and-down motion was possible, and the paper p which faces to the paper binding unit 41 and the paper-aligning tray 42 through the carrying path III through the carrying path II which results in the lower paper ejecting roller pair 7 through the shift conveying roller pair 6. The 1st conveying roller pair 8 for conveying the paper p from the switching claw B to the paper binding unit 41, the 2nd conveying roller pair 9, the 3rd conveying roller pair 10, and paper ejecting roller pair 11 grade are arranged at the carrying path III to paper binding unit 41 direction. The middle stack switching claw C is formed in the carrying path III, and it is divided into the carrying path III which sends the paper p in the direction of a direct paper binding unit, and the carrying path IV for carrying out the press tuck of the paper p. The middle stack conveying roller pair 12 is arranged at the carrying path IV. It is arranged by the paper-aligning tray 42 holding a paper, and around the paper binding unit 41 the paper-aligning tray 42, The jogger fence 42b for performing consistency of the tray body 42a and a paper, It has the return roller pair 42e for striking and adjusting the paper on the emission belt 42c for discharging the bunch of the paper which was located behind the jogger fence 42b and filed, the paper receptacle 42d which is located in the lower end part of the tray body 42a, and receives the lower end edge of a paper sheet bundle, and a tray body. The punch unit 21 is provided with the composition which punches the paper p immediately after having discharged from the image forming device by making the punch 21a move reciprocately to a dice like a hand punch. In this punch unit 21, in performing a stapling process, while not using it, even if it is a case where binding processing by the paper binding unit 41 is not performed, it is usable to punch. To perform binding processing by the paper binding unit 41, it is necessary to carry out punching formation of the hole of the necessary number in the required position which met the edge of the paper sheet bundle as the pretreatment.

[0009]Next, based on drawing 4, the control circuit of the burst trimmer stacker of this invention is explained. Each sensor in the burst trimmer stacker 200 and the signal from each switch are inputted into CPU70 via I/O interface 60. According to the inputted signal, CPU70, The entrance drive motor 28 and the up-and-down trays 31 and 32. The delivery motor 75, the paper binding unit 41 (or) which drive the up-and-down motor 71 which you make it go up and down, the shift motor 72 moved to right and left, the solenoid 73 which performs switching operation of each switching claws A and B and the middle switching claw C, and the return roller 42c and which strike and drive the roller of the solenoid 74 and a delivery system The jogger motor 79 for moving the paper binding unit motor 76 which drives a staple unit, the discharge motor 77 which drives the emission belt 42c, the movable motor 78 to which the paper binding unit 41 (or staple unit) is moved, and the jogger fence 42b is driven. When replacing with the paper binding unit 41 and equipping with a staple unit, the motors 76 and 78 may be used for staple units, respectively. CPU70 controls the drive of a punch motor by the signal from the inlet sensor S1 further. If it changes so that the paper p may convey the switching claw B in the carrying path III direction and the first paper advances into the carrying path III when performing paper binding processing, If it is sent into the transportation part IV for a press tuck by the middle stack switching claw C, and is conveyed by the middle stack conveying roller pair 12 and a paper reaches a suitable position, the paper p will stop. On the other hand, the paper p of the 2nd sheet follows the carrying path III as it is, and dies. And the middle stack conveying roller pair 12 is driven in the position to which the paper and tip of the beginning by which the stack was carried out by the transportation part IV are equal, and two sheets are conveyed simultaneously after that. If the paper binding inlet sensor which a paper sheet rear end does not illustrate is passed, the jogger fence 42b will jog inside only prescribed distance from a position in readiness. A paper binding inlet sensor detects it at the paper sheet rear end passage time, inputs the signal into CPU70, and in CPU70. striking after specified time elapse, making the solenoid 74 one, striking the return roller 42c, and it performing pendulum motion by one of the solenoid 74, and OFF, striking the paper p at the time of one, returning it downward, arranging, and dashing against the tray 42a -- \*\*\*\*\* of the paper p -- it carries out. The paper after the 3rd sheet passes the carrying path III, and performs above-mentioned jogging operation per each paper. After striking, turning off the solenoid 74 and predetermined time's passing, by the jogger motor 79, the jogger fence 42b moves inside paper width, stops, and carries out the end of \*\*\*\*\*. The jogger fence 42b returns to the position of after that origin, and waits for the following paper. This operation is performed to the last page. After jogging to the last page, the both ends of a paper sheet bundle are pressed down, paper binding processing is performed, and paper is delivered to the lower tray 32 with the emission belt 42a.

[0010]Drawing 5 is a flow chart which shows the control procedure at the time of making the arbitrary modes selectable from the inside in the mode of only punching by a punch unit, and the paper binding mode on the binding tape accompanied by punch operation. the binding mode using a binding unit -- or when a staple mode equips a burst trimmer stacker with which unit, it is made to recognize to the device side First, after it is checked that and the paper has advanced when the inlet sensor S1 turns on in Step 1 namely, [ the inlet sensor ] A punch unit is operated and it discharges

on the paper-aligning tray 42 by the procedure which was punched (Step 2) and was continuously mentioned above in this paper (Step 3). The paper of the number of sheets for one bundle in the job concerned (n sheet) discharges on the paper-aligning tray 42, When it aligns, it is judged (Step 4), whether it files, or it discharges as it is (Step 5), When paper binding on the binding tape T is chosen, after filing, and performing binding processing, each binding motors 76 and 78 are turned off (Step 6), a shift transportation motor is driven, and it discharges outside the plane (Step 7). [ the motors 76 and 78 for units ]

[0011]Next, drawing 6 (a) thru/or (f) is a continuity chart showing the binding operation by the paper binding unit 41 with which the burst trimmer stacker by this invention is provided. The paper sheet bundle P with the open hole H is expressed in the section. The reel 100 which holds this paper binding unit 41 where the binding tape T (paper streamer) is rolled about, and rotates the axis 101 as a center, the feed rollers 102 and 103 which guide paper streamer T sent out from the reel 100, the cutter 104, the paper through head 105, and a presser-foot roller

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[Translation done.]